

II.

EXECUTIVE SUMMARY

a. Project Title and Applicant Name

Monitoring adult and juvenile spring and winter chinook salmon and steelhead in Battle Creek, California.

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Principle investigator - Steve Croci

b. Project Description and Primary Biological/Ecological Objectives

The goal of this project is to obtain life history information on spring and winter chinook salmon and steelhead in Battle Creek. This information will assess the suitability of the current habitat and provide an evaluation tool for restoration activities. The following twelve objectives will be determined separately for both spring chinook salmon and steelhead in Battle Creek (similar information on winter chinook salmon will also likely be produced):

1. number of adults returning;
2. timing of adult migration;
3. age, size and gender of returning adults;
4. timing of spawning;
5. location of spawning
6. timing of fry emergence;
7. growth rate of juvenile salmonids;
8. timing of juvenile emigration;
9. size of emigrating salmonids;
10. number of juveniles produced;
11. potential limiting factors effecting survival at various life stages; and,
12. collect tissue samples from adult and juvenile salmonids for genetic analysis.

c. Approach/Tasks/Schedule

Fish counts, snorkel surveys, and juvenile monitoring with rotary screw traps will be conducted to generate the data.

Table 1.--Activity description, starting and ending date of spring and winter chinook salmon monitoring on Battle Creek beginning in January 1999 and continuing yearly thereafter.

Activity	Start Date	End Date	Deliverable
Coleman NFH barrier dam fish counts	Late - February	Early - July	Quarterly and annual report
Snorkel surveys	Early - May	Early - November	Quarterly and annual report
Juvenile monitoring	Start of January	End of December	Quarterly and annual report

d. Justification for Project and Funding by CALFED

Spring chinook salmon are considered a candidate species by the State of California and have been proposed for federal listing. Winter chinook salmon are federally listed as endangered and steelhead are federally listed as threatened. All are identified as tier one primary species by CALFED. Additionally, Battle Creek has been identified by CALFED as a primary Ecological

Unit and this proposal will serve to evaluate restoration actions accomplished within that watershed.

Conducting items in this proposal will provide information on life history characteristics and the suitability of the available habitat in Battle Creek for winter and spring chinook salmon and steelhead. Surveys will also identify limiting factors and assess the effectiveness of restoration actions. The benefits to this project include assessing efforts to maintain a remnant population of spring chinook salmon, assessing the effectiveness of the winter chinook salmon propagation program, and assessing the feasibility of developing a winter chinook salmon population in Battle Creek. Additionally, surveys may coincidentally provide information on other species such as squawfish, suckers, bald eagles, yellow-legged frogs as well as numbers other organisms

e. Budget Costs and Third Party Impacts

Annual project costs in 1999 will be \$314,422 and expected to be the same for following years. This project should be funded for a minimum of three years, however, this project is envisioned to be multi-year and should continue as long as the data is needed by managers and researchers working on restoration projects in Battle Creek. There are expected to be no third party impacts.

f. Applicants Qualifications

The U.S. Fish and Wildlife Service's Northern Central Valley Fish and Wildlife Office has been conducting surveys on Battle Creek to obtain adult life history information on spring and winter chinook salmon since 1995. Limited juvenile sampling has also been conducted during this time period. The Northern Central Valley Fish and Wildlife Service has been extensively involved with monitoring chinook salmon in the Northern Sacramento River since 1978. The Service has a strong interest in Battle Creek as it has been operating the Coleman National Fish Hatchery located in the Battle Creek watershed since 1942.

g. Monitoring and Data Evaluation

Quarterly reports will be developed describing recent findings. Annual reports will describe life history information for a particular brood year. Compiled data will be reviewed by peers (California Department of Fish and Game, Interagency Ecological Program, National Marine Fisheries Service, Battle Creek Watershed Conservancy, and other Service offices) in order to make the best decisions to enhance Battle Creek.

h. Local Support/Coordination with Other Programs/Compatibility with CALFED Objectives

The objective of monitoring, assessing and reporting on priority species, habitat and stressors of concern will be met by this proposal. Aspects of this proposal will address recommendations by the and the Anadromous Fish Restoration Plan to assess the feasibility of developing a winter chinook salmon run in Battle Creek. Conducting these monitoring activities will assist in the evaluation of the winter chinook salmon propagation program being conducted at Coleman National Fish Hatchery located on Battle Creek. Methodologies used are recommended by Comprehensive Assessment and Monitoring Program. Additionally, California Department of Water Resources is proposing to improve passage and reduce entrainment at Pacific Gas and Electric barriers in Battle Creek and this proposal would be a means to assess the effectiveness of those improvements.